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पापड़ — विशिष्टि

(तीसरा पुनरीक्षण)

Indian Standard

PAPAD — SPECIFICATION

(Third Revision)

ICS 67.060

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1999 **Price Group 4**

AMENDMENT NO. 1 MAY 2002
TO
IS 2639 : 1999 *PAPAD* — SPECIFICATION

(Third Revision)

(*Foreword, para* 4, *sentence* 3) — Substitute 'The dough is rolled into various shapes and sizes, dried and suitably packaged' *for* 'The dough is rolled into uniform shapes of varying diameters, dried and suitably packed'

[*Page* 2, *clause* **A-1.1**(f)] — Substitute 'f) Potato flour / fresh potatoes' *for* 'f) Potato flour'.

(FAD 16)

Reprography Unit, BIS, New Delhi, India

Foodgrains Foodgrain Industries and Starches Sectional Committee, FAD 16

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Foodgrains Foodgrain Industries and Starches Sectional Committee had been approved by the Food and Agriculture Division Council

This standard was first issued in 1964 and subsequently revised in 1972 In this revision, the text has been updated and the amendments have been incorporated

PAPAD also known as *APPALAM*, is one of the popular articles of food in the Indian dietary Earlier, a household product, considerable quantities of *PAPAD* are now being made on the cottage industry scale for domestic consumption as well as for export

The product is usually made from a blend of cereal flour, edible starch flour and pulse flour with common salt spices edible vegetable oil and alkaline and mucilagenous additives The recipe varies from region to region The dough is rolled into uniform shapes of varying diameters, dried and suitably packed *PAPAD* is consumed either fried in fat or toasted

In the preparation of this standard due consideration has been given to the provisions of the *Prevention of Food Adulteration Act* 1954 and the Rules framed thereunder and the *Standards of Weights & Measures (Packaged Commodities) Rules* 1977 However this standard is subject to the restrictions imposed under this Act wherever applicable

For the purpose of deciding whether a particular requirement of this standard is complied with the final value observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 1960 Rules for rounding off numerical values (*revised*) The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard

Indian Standard
PAPAD — SPECIFICATION
(Third Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for *PAPAD*.

2 REFERENCES

The following Indian Standards contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards given below:

IS No	*Title*
2491 : 1998	Food hygiene – General principles – Code of practice (*second revision*)
1070 : 1992	Reagent grade water (*third revision*)

3 REQUIREMENTS

3.1 *PAPAD* shall be manufactured and dried under hygienic conditions (*see* IS 2491). Ingredients listed in Annex A only shall be used for preparing *PAPAD*.

3.2 *PAPAD* shall have a uniform shape, size and thickness. The thickness may range between 0.3 to 1.2 mm, except in the case of *PAPAD* made from sago. The thickness of sago *PAPAD* shall be between 1.0 to 1.5 mm. The mean variation in the thickness of *PAPAD* in any package shall be not more than 0.3 mm.

3.3 The *PAPAD* shall be free from broken or frayed edges, excessive number of holes, adhering dirt or foreign matter, insect infestation or fungal growth and any other harmful ingredients.

3.4 *PAPAD* shall be of pleasant taste and smell and shall be free from rancid, bitter and alkaline or soapy taste. Spiced *PAPAD* in the raw form shall have an aroma and taste characteristic of the spices used.

3.5 In the raw form, *PAPAD* shall be pliable and shall not crumble. On frying, *PAPAD* shall be brittle and crisp to bite. It shall not give leathery, gritty, sticky or soggy mouth feel.

3.6 *PAPAD* shall also conform to the requirements given in Table 1.

Table 1 Requirements for *PAPAD*
(*Clause* 3.6)

Sl No.	Characteristic	Requirement	Method of Test, Ref to Annex of This Standard
(1)	(2)	(3)	(4)
i)	Moisture, percent by mass	12.5 15	B
ii)	Total ash (on dry basis) percent by mass, *Max*	12	C
iii)	Acid insoluble ash (on dry basis), percent by mass, *Max*	0.25	D
iv)	Alkalinity of ash as sodium carbonate (on dry basis), percent by mass, *Max*	2.3	E
v)	*p*H of water extract, *Max*	8.5	F
vi)	Fat (on dry basis) percent by mass, *Max*	3.0	G
vii)	Crude fibre (on dry basis), percent by mass, *Max*	1.5	H

4 PACKING AND MARKING

4.1 Packing

PAPAD shall be packed using any suitable food grade packaging material having moisture barrier characteristics. Packages may either be heat sealed or stapled.

4.2 Marking

Each pack shall be marked legibly and indelibly with the following information:

a) Name of the material with brand names, if any,
b) List of major ingredients,
c) Name and address of manufacturer,
d) Batch or code number,
e) Date of manufacture,
f) Net mass,
g) The words 'Best before ' (Month and year to be indicated), and

- h) Any other information as specified under the *Prevention of Food Adulteration Act*, 1954 and Rules framed thereunder and the *Standards of Weights & Measures (Packaged Commodities) Rules*, 1977

4.2.1 *BIS Certification Marking*

The product may also be marked with the Standard Mark

4.2.1.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder The details of conditions under which the license for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards

5 SAMPLING

5.1 Representative samples of the material for ascertaining conformity to the requirements of this standard shall be drawn according to the method given in Annex J

6 TESTS

6.1 Tests shall be carried out in accordance with **3** and the relevant annexes as specified in col 4 of Table 1

6.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests

NOTE Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis

ANNEX A

(*Clause* 3 1)

PERMITTED INGREDIENTS FOR MANUFACTURING *PAPAD*

A-1 INGREDIENTS

A-1.1 The following edible quality ingredients free from insect infestation, extraneous matter and fungal growth, shall be used for the manufacture of *PAPAD*

- a) Rice flour
- b) Wheat flour,
- c) Barley flour,
- d) Maize flour,
- e) Sorghum flour,
- f) Potato flour,
- g) Edible tapioca flour or sago,
- h) Black gram (*Phaseolus mungo* L) flour – made from decuticled black gram,
- j) Green gram (*Phaseolus aureus* Roxb) flour made from decuticled green gram,
- k) Horse gram (*Dolichos biflorus*) flour,
- m) Dal arhar (*Cajanus cajan* sp) flour,
- n) Flour of other decuticled pulses except *khesari dal* (*Lathyrus sativus*),
- p) Edible comman salt,
- q) Edible vegetable oils,
- r) Spices (extracted ones shall not be used),
- s) Harmless vegetable juices obtained from banana stem, gourds, okra (*Bhindi*), *Cissus* or *Vitis quadrangularis*, etc,
- t) Sodium bicarbonate, or filtered water extract of *PAPAD* or *SAJJI KHAR*,
- u) Pulp of jack fruit, and
- v) Water – potable

ANNEX B

[*Table* 1, *Sl No* (i)]

DETERMINATION OF MOISTURE

B-1 PREPARATION OF SAMPLE

B-1.1 Using a clean pair of scissors or a knife, cut each *PAPAD* into small fragments. Mix the fragments thoroughly with a glass rod and preserve in a clean stoppered bottle. These fragments shall be used as the sample for all the determinations.

B-2 PROCEDURE

B-2.1 Weigh accurately about 5 g of the material and dry for 5 hours in a previously weighed porcelain, silica or platinum dish in an air oven maintained at 105 ± 2°C. Cool the dish in a desiccator and weigh with the lid on. Heat again at 105 ± 2°C in the air-oven for 30 minutes. Cool the dish in the desiccator and weigh. Repeat this process of heating for 30 minutes cooling and weighing till the difference in mass between two successive weighings is less than 1 mg. Note the lowest mass.

NOTE – Preserve the dish containing this dried material for the determination of fat (*see* G-3.1).

B-3 CALCULATION

B-3.1 Moisture, percent by mass = $\dfrac{100\,(M_1 - M_2)}{M_1 - M}$

where

M_1 = mass in g of the dish with the material before drying,

M_2 = mass in g of the dish with the material after drying, and

M = mass in g of the empty dish.

ANNEX C

[*Table* 1, *Sl No* (ii) and *Annex* E]

DETERMINATION OF TOTAL ASH

C-1 PROCEDURE

C-1.1 Weigh accurately 20 to 25 g of the material in a previously weighed porcelain, silica or platinum dish. Dry for 2 hours in an air oven maintained at 105 ± 2°C. Ignite the dried material in the dish with the flame of a suitable burner for about 1 hour. Complete the ignition by keeping in a muffle furnace at 600 ± 20°C until grey ash results. Cool in a desiccator and weigh. Heat again at 600 ± 20°C in the muffle furnace for 30 minutes. Cool in the desiccator and weigh. Repeat the process of heating for 30 minutes, cooling and weighing till the difference in mass between two successive weighings is less than 1 mg. Note the lowest mass.

NOTE — Preserve the dish containing this dried material for the determination of acid insoluble ash (*see* C-1.1).

C-2 CALCULATION

C-2.1 Moisture, percent by mass = $\dfrac{100\,(M_1 \quad M_2)}{M_1 - M}$

where

M_1 = mass in g of the dish with the dried material taken for the test,

M_2 = mass in g of the dish with the ash, and

M = mass in g of the empty dish.

ANNEX D
[*Table* 1, *Sl No.* (iii)]

DETERMINATION OF ACID INSOLUBLE ASH

D-1 REAGENTS

D-1.1 Dilute Hydrochloric Acid

Prepared by diluting one part by volume of concentrated hydrochloric acid (analytical grade) with 2.5 parts by volume of distilled water.

D-2 PROCEDURE

D-2.1 To the ash contained in the dish (*see* **C-1.1**) add 25 ml of dilute hydrochloric acid, cover with a watch glass and heat on a water bath for 10 minutes. Allow to cool and filter the contents of the dish through *a Whatman filter paper No. 42 or its equivalent*. Wash the filter paper with water until the washings are free from the acid and return it to the dish. Keep it in an air oven maintained at 105 ± 2°C for about 3 hours. Ignite in a muffle furnace at 600 ± 20°C for 1 hour. Cool the dish in a desiccator and weigh. Heat again at 600 ± 20°C in the muffle furnace for 30 minutes. Cool the dish in the desiccator and weigh. Repeat the process of heating for 30 minutes, cooling and weighing till the difference in mass between two successive weighings is less than 1 mg. Note the lowest mass.

D-3 CALCULATION

D-3.1 Acid insoluble ash (on dry basis),

$$\text{percent by mass} = \frac{100\,(M_1 - M_2)}{M_1 - M}$$

where

M_1 = mass in g of the dish with the dried material (*see* **B-2.1**),

M_2 = mass in g of the dish with the acid insoluble ash, and

M = mass in g of the empty dish (*see* **B-2.1**)

ANNEX E
[*Table* 1, *Sl No.* (iv)]

DETERMINATION OF ALKALINITY OF ASH

E-1 REAGENTS

E-1.1 Standard Hydrochloric Acid, 0.1 N

E-1.2 Phenolphthalein Indicator Solution
0.1 percent in 90 percent ethyl alcohol by volume.

E-2 PROCEDURE

E-2.1 Process as in Annex C to obtain total ash.

E-2.2 To the ash contained in the dish (*see* **E-2.1**) add 10 ml of water. Add two or three drops of phenolphthalein indicator solution and titrate against standard hydrochloric acid till the solution is colourless or faint pink. Note the titre value (A).

E-3 CALCULATION

E-3.1 Sodium carbonate (on dry basis),

$$\text{percent by mass} = \frac{0.53 \times 2A}{M_1 - M}$$

where

A = volume in ml of the standard hydrochloric acid required,

M_1 = mass in g of the dish with the dried material, and

M = mass in g of the empty dish

ANNEX F
[*Table* 1, *Sl No.* (v)]

DETERMINATION OF *p*H

F-1 PROCEDURE

F-1.1 Weigh accurately 5 g of the sample, crush it in powder form and add 50 ml of distilled water. Allow the contents to soak for 1 hour. Stir the contents for 10 to 15 minutes, preferably with the help of a mechanical stirrer, to obtain a uniform aqueous suspension. Record the *p*H of the suspension in a *p*H meter.

ANNEX G

[*Table* 1, *Sl No* (vi)]

DETERMINATION OF FAT

G-1 APPARATUS

G-1.1 Soxhlet Extraction Apparatus

G-2 SOLVENT

G-2.1 Ethyl Ether of Petroleum Ether, Distilling 40-60°C

G-3 PROCEDURE

G-3.1 Transfer about 4 to 5 g of the moisture free sample (*see* **B-2.1**) accurately weighed to a suitable thimble and extract with the solvent in a Soxhlet extraction apparatus for about 10 hours. Dry the extract contained in the Soxhlet flask whose empty mass had been previously determined at 95 to 100°C for 30 minutes. Cool in a desiccator and weigh. Continue the alternate drying and weighing at 30 minutes intervals until the loss in mass between two successive weighings is not more than 1 mg. Record the lowest mass.

NOTE — Preserve the fat free material for the determination of crude fibre (*see* **H-2.1**).

G-4 CALCULATION

G-4.1 Fat (on dry basis)

$$\text{percent by mass} = \frac{10\,000\,(M_1 - M_2)}{M\,(100 - m)}$$

where

M_1 = mass in g of the Soxhlet flask with the extracted fat

M_2 = mass in g of the empty Soxhlet flask, clean and dry,

M = mass in g of the material taken for the test, and

m = moisture percent by mass, in the material (*see* **B-3.1**)

ANNEX H

[*Table* 1, *Sl No* (vii)]

DETERMINATION OF CRUDE FIBRE

H-1 REAGENTS

H-1.1 Dilute Sulphuric Acid, 1.25 percent (*m/v*)

H-1.2 Sodium Hydroxide Solution, 1.25 percent (*m/v*)

H-1.3 Ethyl Alcohol, 95 percent by volume

H-2 PROCEDURE

H-2.1 Weigh accurately about 2.5 g of the preserved defatted material (*see* **G-3.1**) and transfer to a 1 litre flask. Take 200 ml of dilute sulphuric acid in a beaker and bring to the boil. Transfer the whole of the boiling acid to the flask and immediately connect the flask with a water cooled reflux condenser and heat so that the contents of the flask begin to boil within 1 minute. Rotate the flask frequently, taking care to keep the material from remaining on the sides of the flask and out of contact with the acid. Continue boiling for exactly 30 minutes. Remove the flask and filter through fine linen (about 18 threads to a centimetre) held in a funnel and wash with boiling water until the washings are no longer acidic to litmus. Bring to the boil 200 ml of sodium hydroxide solution under a reflux condenser. Wash the residue on the linen into the flask containing the boiling sodium hydroxide solution. Immediately connect the flask with the reflux condenser and boil again for exactly 30 minutes. Remove the flask and immediately filter through the filtering cloth. Thoroughly wash the residue with boiling water, and transfer to a Gooch crucible prepared with a thin but compact layer of ignited asbestos. Wash the residue thoroughly first with hot water and then with about 15 ml of ethyl alcohol. Dry the Gooch crucible and contents at 105 ± 2°C in an air oven to constant mass. Cool and weigh. Incinerate the contents of the Gooch crucible in an electric muffle furnace at 600 ± 20°C until all the carbonaceous matter is burnt. Cool the Gooch crucible containing the ash in a desiccator and weigh.

H-3 CALCULATION

H-3.1 Crude fibre (on dry basis),

$$\text{percent by mass} = \frac{(M_1 - M_2)(100 - F)}{M}$$

where

M_1 = mass in g of Gooch crucible and contents before ashing

M_2 = mass in g of Gooch crucible and contents after ashing,

F = fat, on dry basis, percent by mass in the material (*see* **G-4.1**) and

M = mass in g of the defatted dry material taken for the test (*see* **H-2.1**)

ANNEX J

[*Clause* 5]

SAMPLING OF *PAPAD*

J-1 GENERAL REQUIREMENTS OF SAMPLING

J-1.0 In drawing, preparing, storing and handling samples the following precautions and directions shall be observed

J-1.1 Samples shall not be taken at an exposed place

J-1.2 Precautions shall be taken to protect the samples, the material being sampled, the sampling implement and the containers for samples from adventitious contamination

J-1.3 The samples shall be placed in clean and dry glass containers

J-1.4 Each sample container shall be sealed airtight after filling and marked with full identification particulars, such as the sample number, the date of the sampling, the month and year of manufacture of the material etc

J-1.5 Samples shall be stored in a cool place and protected from excessive variations of temperature

J-1.6 Sampling shall be done by a person agreed to between the purchaser and the supplier and in the presence of the purchaser (or his representative) and the supplier (or his representative)

J-2 SCALE OF SAMPLING

J-2.1 Lot

All the packages in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot If the consignment consists of different batches of manufacture, the packages belonging to the same batch of manufacture shall be separated and shall constitute separate lots

J-2.2 For ascertaining the conformity of the lot to the requirements of specification, tests shall be carried out for each lot separately The number of packages to be selected (*n*) for the purpose shall depend on the size of the lot (*N*) and shall be in accordance with Table 2

Table 2 Number of Packages to be Selected for Sampling

Lot Size *N*	Number of Packages to be Selected *n*
Up to 50	2
51 to 100	3
101 to 200	4
201 to 300	5
301 to 500	6
501 to 800	7
801 to 1 300	8
1 301 to 3 200	9
3 201 and above	10

J-2.3 The packages to be selected for sampling shall be chosen at random from the lot and for this purpose random number tables may be used In case such tables are not available, the following procedure may be adopted

> Starting from any package, count them as 1, 2, 3 , *r* in one order Every *r*th package thus counted shall be withdrawn, *r* being the integral part of *N*/*n*, where *N* and *n* are the lot size and sample size respectively

J-3 TEST SAMPLE AND REFEREE SAMPLE

J-3.1 From each of the packages selected under **J-2.3**, equal number of *PAPADS* shall be taken, broken into small pieces and mixed together so as to form a composite sample This composite sample shall be divided into three equal parts, one for the purchaser, another for the vendor and the third for the referee, and shall be immediately transferred to thoroughly dried moisture proof sample containers which are then sealed airtight and labelled with all the particulars of sampling given under **J-1.4** The composite sample shall be sufficient to carry out all the tests mentioned under **J-4.4**

J-3.2 From the remaining *PAPADS* in each package, sufficient number (multiples of 3) to carry out triplicate tests mentioned under **J-4.3** shall be taken, and divided individually into three sets of equal number of *PAPADS* These sets shall be immediately transferred to thoroughly dried moisture proof containers which are then sealed airtight and labelled with all the particulars of sampling given under **J-1.4** The *PAPADS* in each such sealed containers shall constitute an individual test sample These individual test samples shall be separated into three identical sets of test samples in such a way that each set has a sample representing each selected package One of these three sets shall be marked for the purchaser, another for the supplier and the third for the referee

J-3.3 Referee Samples

Referee sample shall consist of the composite sample and a set of individual test samples marked for the purpose and shall bear the seals of the purchaser and the supplier and shall be kept at a place agreed to between the two

J-4 NUMBER OF TESTS

J-4.1 The number of tests mentioned in **J-4.2** and **J-4.3** shall be first conducted on the test samples marked for the purchaser In the contingencies, such as loss, spoilage, spilling, etc, of the purchaser's test samples or if the supplier so desires, the test samples marked for the supplier may be tested In case of a dispute, the referee samples shall be tested and the test results obtained on the referee samples shall be considered final

J-4.2 Each *PAPAD* in the individual test sample (*see* **J-3.2**) shall be examined for appearance and dimensions

J-4.3 Tests for the determination of moisture shall be conducted individually on each of the samples constituting a set of individual test sample (*see* **J-3.2**)

J-4.4 Tests for the determination of the remaining characteristics, namely, total ash, acid insoluble ash, fat, crude fibre, and sodium bicarbonate shall be conducted on the composite sample (*see* **J-3.1**)

J-5 CRITERIA FOR CONFORMITY

J-5.1 For Tests on Individual Samples

The lot shall be declared to have satisfied the requirements of appearance and dimensions if each of the *PAPADS* inspected under **J-4.1** satisfies the relevant specification requirements.

J-5.1.1 The lot shall be declared to have satisfied the requirements of moisture if each of the test results (*see* **J-4.3**) satisfies the relevant specification requirements

J-5.2 For Composite Sample

The lot shall be declared to have satisfied the requirements of the remaining characteristics (*see* **J-4.4**) if the test results on the composite sample for the characteristics satisfy the corresponding relevant specification requirements

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